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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/770,358	02/02/2004	Ronald S. Karr	VRT0133US	7650
60429	7590	09/19/2007		
CAMPBELL STEPHENSON LLP 11401 CENTURY OAKS TERRACE BLDG. H, SUITE 250 AUSTIN, TX 78758			EXAMINER YU, JAE UN	
			ART UNIT 2185	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/770,358	KARR ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jae U. Yu	2185	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 April 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6, 8-17 and 19-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-17 and 19-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

The examiner acknowledges the applicant's submission of the RCE dated 4/23/2007. At this point claims 1 and 6 have been amended and claims 7 and 18 have been cancelled. Thus, claims 1-6, 8-17 and 19-22 are pending in the instant application.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1, 4-6, 8-10, 12, 15-17 and 19-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Shackelford et al. (US 2005/0154845).

2. Independent claims 1 and 12 disclose, "a memory medium comprising instructions executable by a computer system [**"Code in the computer readable medium is executed by a processor", Paragraph 91]**".

"Creating a first storage object, wherein the first storage object comprises a computer system creating a first storage object description, wherein the first storage object

description comprises data that relates **[Mapping between virtual and physical volumes, Paragraph 34]** the first storage object to first underlying storage objects or to first physical memory regions **[Virtual volumes (“the first storage object”) that correspond to the “physical storage” 106 (Figure 1), Paragraph 38]**”

“Creating a second storage object as a virtual snapshot copy of the first storage object **[“Virtualized” mirror of the primary storage, Figure 1]**, wherein creating the second storage object comprises the computer system creating a second storage object description, wherein the second storage object description comprises data identifying the second storage object as a snapshot copy **[Maintaining the consistency between the copy and the original storage (The replication management application identifies the secondary storage control as a copy of the primary storage control), Paragraph 34]** of the first storage object”

“Adding to the first storage object description data identifying the second storage object as a snapshot copy of the first storage object **[The primary storage control identifies the secondary storage control as a mirror of itself, Figure 1]**”

“the computer system transmitting the first storage object description to a first computer system, and ; the computer system transmitting the second storage object description to a second computer system **[Storing “virtual volumes” 206 in “physical storages” 106/108, Figure 1 & 2]**”

3. **Claims 4 and 15** disclose, "information relating [**Mapping between virtual and physical volumes, Paragraph 34**] the second storage object to second underlying storage objects or second memory regions [**Virtual volumes ("the second storage object") that correspond to the "physical storage" 108, Figure 1**]".

4. **Claims 5 and 16** disclose, "modifying the first storage description [**"Data Update Stream" 200, Figure 2**]".

"Transmitting the modified first storage description to the first and second computer systems [**Storing the updates to "Primary Storage Control" 100 and "Secondary Storage Control" 102, Figure 2**]"

5. **Independent claims 6 and 17** disclose, "a memory medium comprising instructions executable by a computer system [**"Code in the computer readable medium is executed by a processor", Paragraph 91**]".

"Creating a second storage object, wherein creating the second storage object is created as a virtual snapshot copy of a first storage object [**"Virtualized" mirror of the primary storage, Figure 1**], wherein creating the second storage object comprises a computer system creating a description of the second storage object [**Maintaining the consistency between the copy and the original storage (The replication**

**management application identifies the secondary storage control as a copy of the primary storage control), Paragraph 34]**"

"Adding data to a description for the first storage object to indicate that the first storage object is related to the second storage object **[The primary storage control identifies the secondary storage control as a mirror of itself, Figure 1]**"

"the computer system transmitting the first storage object to a first computer system, and; the computer system transmitting the second storage object description to a second computer system **[Storing "virtual volumes" 206 in "physical storages" 106/108, Figure 1 & 2]**".

6. **Claims 8 and 19** disclose, "the data added to the first storage object description indicates that the second storage object is a snapshot copy to the first storage object **[The primary storage control identifies the secondary storage control as a mirror of itself, Figure 1]**".

7. **Claims 9 and 20** disclose, "the first storage object description is transmitted to the first computer system after the data is added to the first storage object description **[The primary storage control identifies the secondary storage control as a mirror of itself, Figure 1]**". The primary control always recognizes the secondary storage

control as its copy to make the data updates possible (Figure 2). Therefore, the "data" is already present and constantly being updated before the transmission.

8. Claims 10 and 21 disclose, "data that relates the second storage object to second underlying storage objects **[Mapping between virtual and physical volumes, Paragraph 34]**".

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 2, 3, 11, 13, 14 and 22 are rejected under 35 USC 103 (a) as being obvious over Shackelford et al. (US 2005/0154845) in view of Berg (US 6,222,558).
2. As per claims 2, 3, 11, 13, 14 and 22, Shackelford et al. disclose, "transmitting the first storage object description after the data is added to the first storage object description to indicate that the first storage object is related to the second storage object **[The primary storage control identifies the secondary storage control as a mirror of itself, Figure 1]**". The primary control always recognizes the secondary storage control as its copy to make the data updates possible (Figure 2). Therefore, the "data" is already present and constantly being updated before the transmission.

Shackelford et al. do not disclose expressly, "transmitting the first storage object description to the second computer system; transmitting the second storage object to the first computer system".

**Berg discloses transmitting object description to other workstations in column 2, at lines 46-51.**

Shackelford et al. and Berg are analogous art because they are from the same filed of endeavor of data transmission.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Shackelford et al. by transmitting object description to other workstations as taught by Berg in column 2, at lines 46-51.

The motivation for doing so would have been to provide a simplified set of commands that is concise for rapid transmission and reception as expressly taught by Berg in column 2, at lines 38-41.

Therefore, it would have been obvious to combine Berg with Shackelford et al. for the benefit of simultaneous data sharing to obtain the invention as specified in claims 2, 3, 11, 13, 14 and 22.

### ***Arguments Concerning Prior Art Rejections***

#### **1<sup>st</sup> Point of Argument**



Regarding independent claim 1, the applicant argues that the Advisory Action and the Final Office Action are inconsistent regarding the limitation, "transmitting the first storage object description...to a second computer system". However, the examiner does not agree since the Advisory Action further explains about virtual-to-physical mapping (Page 2, Advisory Action) that is necessary for "storing virtual volumes in physical volumes" (Page 4, Final Office Action). Thus, the examiner maintains the same position as stated in the Advisory Action.

## **2<sup>nd</sup> Point of Argument**

Regarding independent claims 1 and 6, the applicant argues that Shackelford fails to teach the new limitation, "a computer system" that performs the recited method. However, Shackelford teaches a consistent remote copy method implemented in a computer system (Paragraph 91). Thus, the examiner maintains the same position regarding the amended claim.

## ***Conclusion***

### **A. Claims No Longer in the Application**

Claims 7 and 18 were cancelled.

### **B. Claims Rejected in the Application**

Claims 1-6, 8-17 and 19-22 have received a first action on the merits and are subject of a first action non-final.

C. Direction of Further Remarks

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jae Un Yu who is normally available from 9:00 A.M. to 5:30 P.M. Monday thru Friday and can be reached at the following telephone number: (571) 272-1133.

If attempts to reach the above noted examiner by telephone are unsuccessful, the Examiner's supervisor, Sanjiv Shah, can be reached at the following telephone number: (571) 272-4098.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

9/12/2007

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